

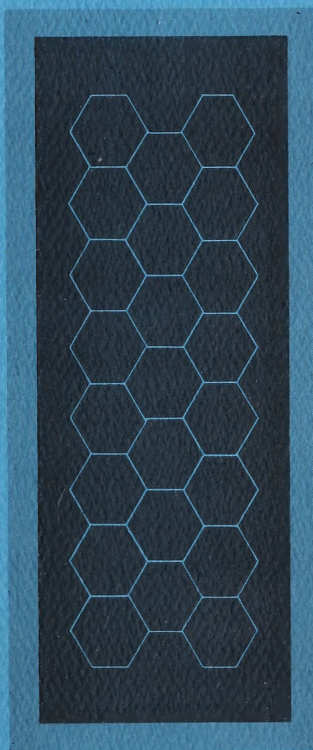
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THE ECONOMICS **OF HONEY** PRODUCTION



Alberta

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The Economics of Honey Production in Alberta, 1994

by

G. Nabi Chaudhary

**Production Economics Branch
Economic Services Division
Alberta Agriculture, Food & Rural Development
October, 1995**



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FOREWORD

Beekeeping is an important enterprise in Alberta Agriculture's diversification strategy. It contributed almost \$21 million to the provincial agricultural economy in 1994. The Production Economics Branch monitors beekeeping returns and costs to keep producers, policy makers and the industry up-to-date on the economic performance of apiaries across the province. Results of these surveys are used in a variety of policy and program initiatives. Equally important, study participants as well as producers are encouraged to compare the performance of their beekeeping operation with the related group average to help improve the economic performance of their beekeeping business.

Carlyle Ross
Branch Head
Production Economics Branch

ACKNOWLEDGEMENTS

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G. Nabi Chaudhary

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SECTION I

INTRODUCTION

The Production Economics Branch (PEB) has been monitoring the costs and returns of livestock and crop production in the province in an extensive way since the 1960's. These studies have been viewed as an important tool for assisting producers in their cropping decisions and the federal and provincial governments in developing policies and programs for the different farm enterprises. Where information gaps existed in other provinces, results from these studies have served as the basis to fill those gaps.

The PEB has been monitoring production costs and returns for the beekeeping (honey production) sector of the agriculture industry since the early 1970's. The 1994 Costs and Returns Study is a continuing effort to monitor honey production in the province. Information presented in this report will be used for a variety of reasons including program evaluation and policy developments for the honey industry. It would also assist the individual study participants to compare their costs and returns with the group averages to develop/manage their operations better.

OBJECTIVES OF THE STUDY

Following are the objectives of this study:

1. To determine production costs and returns associated with beekeeping in Alberta.
2. To establish physical input/output relationships for beekeeping in Alberta
3. To provide each study participant with a detailed analysis of his/her beekeeping operation and an opportunity to compare the operation with the group averages.
4. To document how variation in size of operation affects net returns.
5. To observe regional differences in costs and returns for beekeeping operations across the province.
6. To provide an up-to-date economic report on beekeeping to assist governments in developing programs and policies for this industry.

THE STUDY SAMPLE

A total of 32 beekeepers were randomly selected across the province to obtain production costs and returns data for the 1994 production year. Attempt was made to maintain the 1993 study participants to observe changes from one year to another. However, a few of the beekeepers from the 1993 study could not provide the needed information for the 1994 study. Of this sample, only 24 apiarists were surveyed because of time and financial constraints. The results presented in the study are based on 24 beekeepers in Alberta. Regional breakdown of the sample is as follows:

Group	Region	Number of Participants	Average Number of Hives per Beekeeper
I	Southern (1) North-Central (2)	5	1,629
II	North-East (3) North-West (4)	10	931
III	Peace River (5)	9	835
	TOTAL	24	1,040

The study sample was further divided into the following three groups by size of operation:

Group	Size of Operation	Number of Participants	Average Number of Hives per Beekeeper
IV	Up to 600 Hives	6	391
V	601 to 1,000 Hives	10	855
VI	Over 1,000 Hives	8	1,759
	TOTAL	24	1,040

Number of hives included in the study sample was 24,960 for the 1994 honey production year, i.e., about 16 per cent of the total number of hives in the province. The largest honey producer operated 3,600 hives and the smallest about 225 hives during the 1994 honey production year.

SECTION II

METHOD OF ANALYSIS

The raw data obtained from 24 study participants (beekeepers) across the province was reviewed for information gaps before entering into the computer for analysis. Individual analyses, provincial and group averages (by region and size of operation) were completed using the Paradox program.

HONEY PRODUCTION IN ALBERTA

Honey production in Alberta has widely fluctuated during the last several decades. The number of beekeepers in the province has ranged from a low of 761 in 1993 to 2,000 in 1975. Over the last decade, the number of apiarists has steadily declined from 1800 in 1980 to about 761 in 1993, a decrease of about 58 per cent. The number of colonies during the last two decades has also fluctuated considerably; i.e., ranging from 110,000 in 1970 to 193,000 in 1987. Since 1980, the number of colonies per beekeeper has been increasing, with the exception of 1985 when it showed a decrease from 1984. It appears that the size of apiaries is increasing steadily and more or less the same production levels are being maintained, even though the number of beekeepers in the province is shrinking. A historical summary of the number of beekeepers, colonies, colonies per apiary, production per colony and price of honey received by honey producers in Alberta is presented in Table 1.

COMPUTATION OF COSTS AND RETURNS

Costs and returns data presented in this report were weighted by the number of hives. For various group analyses (regions and by size of operation) costs were calculated on a per hive and per pound basis by dividing the sum of all expenses by the number of hives in that particular group. In a few cases, certain costs were not incurred in an individual operation, therefore, cost per unit for different inputs was averaged to determine the cost per hive and per pound of honey produced.

TABLE 1:
HISTORICAL DATA ON HONEY PRODUCTION IN ALBERTA,
1970 – 1994

Year	Number of Beekeepers	Number of Colonies	Colonies Per Apiary	Production Per Colony (lbs.)	Price Per Pound (¢)
1970	1,200	110,000	92	194	14.0
1971	1,200	115,000	96	196	20.0
1972	1,200	130,000	108	154	31.0
1973	1,300	145,000	112	150	46.0
1974	1,800	156,000	87	149	46.0
1975	2,000	158,000	79	128	39.9
1976	2,000	160,000	80	88	37.2
1977	1,800	165,000	92	130	43.1
1978	1,800	160,000	89	125	50.8
1979	1,700	150,000	88	150	57.2
1980	1,800	160,000	89	141	58.1
1981	1,700	170,000	100	116	64.4
1982	1,650	174,000	105	105	62.2
1983	1,610	172,000	107	145	59.9
1984	1,600	180,000	112	154	48.5
1985	1,700	170,000	100	108	56.3
1986	1,700	190,000	112	126	59.9
1987	1,480	193,000	130	132	41.7
1988	1,140	150,000	132	154	39.9
1989	855	143,500	168	119	49.0
1990	840	152,000	181	154	58.1
1991	830	147,000	177	143	57.8
1992	800	148,000	185	156	58.7
1993	761	148,000	194	160	61.7
1994	750	159,000	212	195	65.3

Source: Agriculture Statistics Yearbook, Statistics Branch, Alberta Agriculture, Food and Rural Development, 1971 to 1994, Edmonton, Alberta

Total Value of Honey:

Total value of honey is based on:

- Bulk honey sales;
- Bulk honey inventory;
- Consumer pack sales;
- Consumer pack inventory; and
- Other honey sales.

Total Value of Production

In addition to total value of honey (A), total value of production also includes:

- Wax sales;
- Pollen sales;
- Crop insurance receipts;
- Miscellaneous income (any program payments); and
- Less honey purchase of resale.

The study participants were asked to provide actual sales and an estimate of expected price for any honey held in inventory and/or any other stock.

Cash Costs:

Most of the inputs used in honey production were purchased during the production year and recorded as such in the year–end statement. The study participants were asked to provide estimates for those costs for which actual records were not available, i.e., an inventory carried from last year. In 1994, the average hourly wage for hired labour was \$8.09 per hour. Operating interest was the actual amount paid by the study participants.

Total Variable Costs:

Total variable cost is based on total cash costs (C above) and operator and family labour. Operator's and family labour were valued at \$10.50 and \$7.50 per hour, respectively. The study participants were asked to provide estimates of hours spent on the honey operation by their family member(s) and themselves.

Total Capital Costs:

Capital costs include depreciation on buildings, bee equipment, and vehicles, etc. Capital interest was the actual amount paid by the study participants for capital purchases.

Total Production Costs:

Total production cost comprises of cash costs (C), plus operator and family labour or total variable cost (D), and total capital cost (E).

Management Indicators:

Management indicators presented at the bottom of various tables show return to value of honey (total value of honey less cash costs), gross margin (total value of production less cash costs) return to investment and equity. These indicators exhibit profit margins and economic viability of honey production in Alberta and by regions and size of operation.

SECTION III

HONEY PRODUCTION COSTS AND RETURNS IN ALBERTA

The results presented in Table 2 are based on data provided by 24 beekeepers across the province. In 1994, honey produced for sale by an average study participant was 222,958 pounds, of which 209,355 pounds (94%) were sold as bulk honey. Consumer pack sales and consumer pack inventory were 411 and 151 pounds, respectively. Other honey sales amounted to 603 pounds in 1994. Honey held in inventory was 12,407 pounds from the 1994 honey production year. Average yield per hive was estimated at 214 pounds for the 1,040 hives in production. Details on honey, wax and pollen sales and other income are given in Table 2.

Total value of honey (bulk sales, inventory, consumer pack sales, consumer pack inventory, and other honey sales) amounted to \$44,020 per average honey producer with 1,040 hives of \$138 per hive (\$0.65 per pound). When wax/pollen/other sales; crop insurance receipts, and miscellaneous income were included to the value of honey, total value of production increased to \$155,110 or \$149 per hive (\$0.70 per pound of honey produced) in 1994.

Cash Costs:

Cash costs include all out-of-pocket costs which amounted to \$79,917 per average study participant in 1994. In terms of cash costs per hive, average amount was \$77 per hive (\$0.36 per pound). Because of the producers' interest in knowing their cash costs for each basic unit of production, these costs were broken into as much detail as possible. The most significant inputs which make up major portions of cash costs are bee expenses, hired labour, and building/equipment repair and maintenance.

The study participants were asked to estimate time spent by their family members and themselves in regards to the honey operation. The time spent by the operator was valued at \$10.50 per hour and \$7.50 per hour for a family member(s). When operator and family labour charges were added to cash costs, the total variable cost amounted to \$102,990 per average study participant and \$99 per hive, or \$0.46 per pound of honey produced.

TABLE 2

HONEY PRODUCTION COSTS AND RETURNS
ALBERTA
1994

NUMBER OF HIVES		1040.50		
AVERAGE YIELD PER HIVE (LBS)		214.28		
HONEY PRODUCED (LBS)		222957.90		
		TOTAL	PER HIVE	PER POUND PRODUCED
		-----	\$ -----	
BULK HONEY SALES	209355 lbs.	135045.89	129.79	.61
BULK HONEY INVENTORY	12407 lbs.	7918.17	7.61	.04
COMSUMER PACK SALES	411 lbs.	386.09	.37	
COMSUMER PACK INVEN.	151 lbs.	163.20	.16	
OTHER HONEY SALES	633 lbs.	506.76	.49	
A. TOTAL VALUE OF HONEY		144020.11	138.41	.65
WAX/POLLEN/OTHER SALES	4701 lbs.	10631.83	10.22	
CROP INSURANCE RECEIPTS		0.00	0.00	0.00
MISCELLANEOUS INCOME		780.30	.75	
less HONEY PURCHASE FOR RESALE (-)		322.46	.31	
B. TOTAL VALUE OF PRODUCTION		155109.79	149.07	.70
CASH COSTS:				
Bee Purchase - (Package Bees)		1343.96	1.29	
Bee Purchase - (Queens)		4447.50	4.27	
Freight		319.51	.31	
Feed - Sugar	45286.21 lbs.	12888.25	12.39	
Medicine/Icing Sugar		1869.86	1.80	
Cyanogas/Bee Repellent		181.49	.17	
Bldg./Equip. Repair & Maint.		9991.17	9.60	
Bldg./Equip. Insurance		1348.88	1.30	
Heating Fuel		636.90	.61	
Utilities		2628.42	2.53	
Machinery Fuel/Repairs		4347.63	4.18	
Vehicle Insurance/Registration		1355.06	1.30	
Other Insurance - Product		38.33	.04	
- Crop		1035.15	.99	
Property and Business Tax		1010.36	.97	
Labels/Tags/Containers		1699.17	1.63	
Small Tools/H'ware/Off. Supplies		2859.26	2.75	
Promotion/Mktg./Assoc. Fees		876.07	.84	
Accounting/Legal		1308.35	1.26	
Forage Access		2793.46	2.68	
Custom Work/Leases		2553.67	2.45	
Hired Labour	2377.06 hours	18696.78	17.97	
Miscellaneous Expense		4650.49	4.47	
Operating Interest Paid		1037.23	1.00	
C. TOTAL CASH COST		79916.94	76.81	.36
Plus:				
Operator Labour	2178.96 hours	22879.06	21.99	
Family Labour	25.83 hours	193.75	.19	
D. TOTAL VARIABLE COST		102989.75	98.98	.46
CAPITAL COSTS:				
Depreciation - Buildings and Equipment		20843.85	20.03	
Capital Interest Paid		5909.97	5.68	
E. TOTAL CAPITAL COST		26753.82	25.71	.12
F. TOTAL PRODUCTION COST		129743.57	124.69	.58
G. MANAGEMENT INDICATORS:				
RETURN TO VALUE OF HONEY (A-C)		64103.17	61.61	.29
GROSS MARGIN (B-C)		75192.85	72.27	.34
RETURN TO INVESTMENT (B-F+Cap.Int.Paid)		31276.19	30.06	
RETURN TO EQUITY (B-F)		25366.21	24.38	

Capital Costs:

Capital costs are comprised of depreciation for buildings, bee equipment, vehicles and capital interest paid. Average total capital cost amounted to \$26,754, or \$26 per hive (\$0.12 per pound) per study participant in 1994.

Total Production Cost:

Average total production cost was estimated at \$129,744 for an average honey operation with 1,040 hives in 1994. Average production cost per hive or per pound of honey produced was \$125 or \$0.58, respectively. Details on total production cost for an average study participant are presented in Table 2.

Management Indicators:

When total cash cost was deducted from the total value of honey, the average study participant showed a positive return of \$64,103 or \$62 per hive (0.29 per pound of honey produced). Similarly, when total cash cost was deducted from total value of production, average honey operation showed a return of \$75,193 per study participant of \$72 per hive (\$0.34 per pound). Average return to investment and equity was positive by \$30 and \$24 per hive, respectively.

Investment Costs:

Investment costs were divided into four categories, namely, land, buildings, bee equipment (including machinery), and vehicles. The study participants were asked to provide market value of land, buildings, bee equipment, machinery and vehicles to estimate total investment and depreciation for an average beekeeping operation. Actual interest paid on capital was used to arrive at total capital cost which also included depreciation for buildings, bee equipment, and vehicles.

For the study sample, land associated with the beekeeping operation was about 16 acres, valued at \$13,694 or \$856 per acre. Building investment for a 1,040 beehive operation was \$78,138 or \$75 per hive. Honey equipment investment for the study sample (24 participants) was estimated at \$199,055 per average operation of \$191 per hive. Machinery (automotive) investment was based on the percentage use of vehicles for the honey operation. This investment was estimated at \$26,717 or \$26 per hive in 1994. When all of the investment items were added together, total investment amounted to \$317,604 per average beekeeping operation or \$305 per hive. Details on land, buildings, bee equipment and machinery investment are presented in Table 3.

HONEY PRODUCTION COSTS AND RETURNS BY REGIONS

The study sample was divided into three groups by regions, i.e., Southern, and North–Central (Group I); North–East and North–West (Group II); and Peace River (Group III). The Southern and North–Central regions had five (5) study participants. There were ten (10) beekeepers in the North–East and North–West (Group II) regions. Group III represents producers from the Peace River Region. The sample size for Group III or Peace River region was nine (9). Figure 1 shows the distribution of the study sample by regions.

Group I (Southern and North–Central Regions):

Results presented in Table 4 are based on the averages for five study participants. Average size of the beekeeping operation was 1,629 hives. Yield per hive for this group was 192 pounds, thus producing over 312,523 pounds of marketable honey. Total value of production including insurance receipts and miscellaneous income for this group was \$222,671 per average beekeeper or \$137 per hive (\$0.71 per pound).

Average total cash costs for Group I participants amounted to \$101,018 per study participant and \$62 per hive or \$0.32 per pound of honey produced. When operator and family labour were added to cash costs, average total variable cost for the five beekeepers in this group increased to \$127,328 per operation. It was \$78 per hive or \$0.41 per pound of honey produced. Average capital costs for Group I participants amounted to \$33,901 per operation, or \$21 per hive (\$0.11 per pound). Average total production cost for study participants in the Southern and North–Central regions was estimated at \$161,229 per beekeeping operation and \$99 per hive or \$0.52 per pound of honey produced in 1994.

Details on total value of production, cash costs, variable costs, capital costs and total production cost for Group I participants are given in Table 4. Average total investment for land, buildings, bee equipment, and machinery for this group of honey producers is presented in Table 5. Average total investment for honey producers in this group amounted to \$368,229 per operation or \$226 per hive during the 1994 honey production year.

TABLE 3

**APIARY ENTERPRISE INVESTMENT
ALBERTA
1994**

INVESTMENT ITEMS:

		TOTAL	PER HIVE
		-----	\$ -----
LAND	16.04 acres	13694.22	13.16
BUILDINGS		78138.17	75.10
BEE EQUIPMENT		199054.64	191.31
MACHINERY		26717.42	25.68
TOTAL INVESTMENT		317604.45	305.24
TOTAL EQUITY	91.92 %	291931.26	280.57

BREAK-DOWN OF INVESTMENT:

	ENTERPRISE VALUE (\$)	AGE (YEARS)	DEPRECIATION (\$)
Land	13694.22	---	---
SUB-TOTAL	13694.22	---	---
Building #1	15219.08	13.06	760.95
Building #2	13654.17	18.10	682.71
Building #3	1625.00	23.00	81.25
Building #4	791.67	11.05	39.58
Building #5 - House (25%)	46848.25	39.85	2342.41
SUB-TOTAL	78138.17		3906.91
Hives	112625.00	10.43	5631.25
Pallets	3732.88	7.61	429.28
Fork Lift	6399.92	10.65	543.99
Hive Feeders	5862.25	20.72	1172.45
Super Elevator	393.71	10.07	19.69
Uncapping Machines	3219.42	7.11	160.97
Honey Extractor	13140.08	9.89	657.00
Dryer/Heat Exchanger	616.67	7.38	30.83
Wax Spinner/Separator	2581.83	8.60	129.09
Pump & Motor	2154.25	7.52	247.74
Honey Tank & Pipe	1699.63	14.23	84.98
Feed Tank	836.92	8.80	41.85
Storage Vessel	356.25	5.73	17.81
Boiler Furnace	1511.38	8.70	75.57
Water System	4662.33	10.16	233.12
Compressor	484.22	5.54	24.21
Pressure Washer	581.04	3.31	66.82
Fuel Tank	572.92	13.80	28.65
Blower	566.83	4.91	28.34
Scales	992.46	8.91	49.62
Barrels	1545.04	2.11	77.25
Barrel Loader	212.88	5.38	10.64
Carts	297.67	9.93	14.88
Fencers/Shockers	907.04	5.67	45.35
Shop Tools	3914.38	4.33	450.15
Staplers	429.83	6.23	21.49
Office Equipment	1437.63	2.85	71.88
Lawn Mower	1193.38	6.73	137.24
Over-Wintering Insulation	11392.56	6.01	2278.51
Miscellaneous Equipment	14734.27	48.05	1083.77
SUB-TOTAL	199054.64		13864.44
Truck #1	6104.17	10.13	701.98
Truck #2	6652.08	6.91	764.99
Truck #3	5917.08	9.26	680.46
Truck #4	8044.08	7.44	925.07
SUB-TOTAL	26717.42		3072.50
=====			
TOTAL INVESTMENT	317604.45		20843.85
=====			

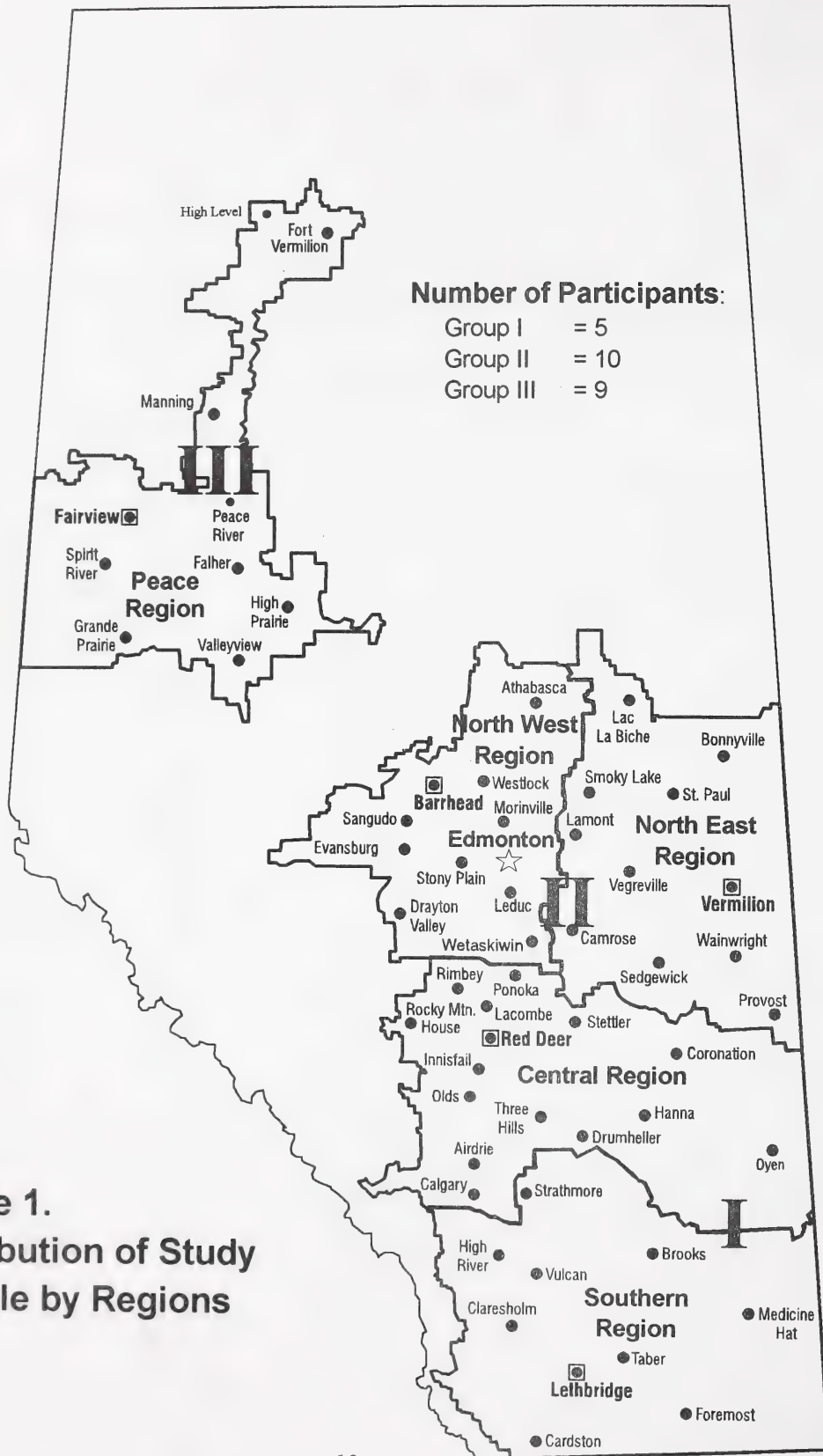


Figure 1.
Distribution of Study
Sample by Regions

Group II (North–East and North–West Regions):

Information presented in Table 6 is based on the averages of ten (10) participants. On an average, the number of hives for this group was 931 with average yield being 205 pounds per hive. Total amount of honey produced by the participants in Group II was 190,793 pounds in 1994.

Average total value of production for this group was \$125,551 per operation and \$135 per hive or \$0.66 per pound of honey produced. Cash costs for Group II amounted to \$81 per hive or \$0.39 per pound. When all costs (operator, family labour and capital costs) were added together, the average total production cost was \$135 per hive or \$0.66 per pound of honey produced. This group of participants showed relatively lower return over cash costs compared to the other two groups. Average return to investment was positive for this group at \$3.24 per hive. Average return to equity was also positive by \$0.33 per hive. Details on costs and returns for Group II study participants are shown in Table 6.

Average total investment for land, buildings, bee equipment, and machinery (vehicles) for Group II study participants (North–East and North–West regions) amounted to \$369,126 per operation or \$396 per hive. Details on investment for this group are presented in Table 7.

Group III (Peace River Region):

Nine (9) honey producers provided detailed information on their operations from the Peace River region. Group averages for these study participants resulted in 835 hives per honey producer with an average yield of 250 pounds per hive. Average total value of honey for Group III participants amounted to \$135,947 per beekeeping operation or \$163 per hive (\$0.65 per pound). When income from honey by-products and other programs were combined with value of honey, average total value of production was estimated at \$150,419 per operation or \$180 per hive (\$0.72 per pound).

TABLE 4

**HONEY PRODUCTION COSTS AND RETURNS
SOUTHERN AND CENTRAL REGIONS
1994**

NUMBER OF HIVES		1628.80		
AVERAGE YIELD PER HIVE (LBS)		191.87		
HONEY PRODUCED (LBS)		312523.30		
		TOTAL	PER HIVE	PER POUND PRODUCED
			\$	
BULK HONEY SALES	285584 lbs.	185786.43	114.06	.59
BULK HONEY INVENTORY	26003 lbs.	16252.00	9.98	.05
COMSUMER PACK SALES	137 lbs.	112.13	.07	
COMSUMER PACK INVEN.	0 lbs.	0.00	0.00	
OTHER HONEY SALES	800 lbs.	500.00	.31	
A. TOTAL VALUE OF HONEY		202650.55	124.42	.65
WAX/POLLEN/OTHER SALES	7714 lbs.	17819.79	10.94	
CROP INSURANCE RECEIPTS		0.00	0.00	0.00
MISCELLANEOUS INCOME		2200.84	1.35	
less HONEY PURCHASE FOR RESALE (-)		0.00	0.00	
B. TOTAL VALUE OF PRODUCTION		222671.18	136.71	.71
CASH COSTS:				
Bee Purchase - (Package Bees)		5200.00	3.19	
Bee Purchase - (Queens)		2515.00	1.54	
Freight		0.00	0.00	
Feed - Sugar	76814.20 lbs.	20241.29	12.43	
Medicine/Icing Sugar		3100.71	1.90	
Cyanogas/Bee Repellent		264.00	.16	
Bldg./Equip. Repair & Maint.		10791.45	6.63	
Bldg./Equip. Insurance		1414.05	.87	
Heating Fuel		336.44	.21	
Utilities		3852.55	2.37	
Machinery Fuel/Repairs		4837.22	2.97	
Vehicle Insurance/Registration		1047.29	.64	
Other Insurance - Product		0.00	0.00	
- Crop		1471.40	.90	
Property and Business Tax		733.31	.45	
Labels/Tags/Containers		1596.34	.98	
Small Tools/H'ware/Off. Supplies		2176.23	1.34	
Promotion/Mktg./Assoc. Fees		696.73	.43	
Accounting/Legal		2282.60	1.40	
Forage Access		2816.20	1.73	
Custom Work/Leases		1761.60	1.08	
Hired Labour	3881.60 hours	27574.30	16.93	
Miscellaneous Expense		4978.99	3.06	
Operating Interest Paid		1330.01	.82	
C. TOTAL CASH COST		101017.71	62.02	.32
Plus:				
Operator Labour	2488.60 hours	26130.30	16.04	
Family Labour	24.00 hours	180.00	.11	
D. TOTAL VARIABLE COST		127328.01	78.17	.41
CAPITAL COSTS:				
Depreciation - Buildings and Equipment		22611.47	13.88	
Capital Interest Paid		11289.34	6.93	
E. TOTAL CAPITAL COST		33900.82	20.81	.11
F. TOTAL PRODUCTION COST		161228.83	98.99	.52
G. MANAGEMENT INDICATORS:				
RETURN TO VALUE OF HONEY (A-C)		101632.84	62.40	.33
GROSS MARGIN (B-C)		121653.47	74.69	.39
RETURN TO INVESTMENT (B-F+Cap.Int.Paid)		72731.70	44.65	
RETURN TO EQUITY (B-F)		61442.35	37.72	

TABLE 5

**APIARY ENTERPRISE INVESTMENT
SOUTHERN AND CENTRAL REGIONS
1994**

INVESTMENT ITEMS:

		TOTAL	PER HIVE
		-----	\$ -----
LAND	19.80 acres	19360.00	11.89
BUILDINGS		106789.00	65.56
BEE EQUIPMENT		211789.80	130.03
MACHINERY		30290.00	18.60
TOTAL INVESTMENT		368228.80	226.07
TOTAL EQUITY	88.21 %	324803.58	199.41

BREAK-DOWN OF INVESTMENT:

	ENTERPRISE VALUE (\$)	AGE (YEARS)	DEPRECIATION (\$)
Land	19360.00	---	---
SUB-TOTAL	19360.00	---	---
Building #1	27600.00	9.43	1380.00
Building #2	20000.00	8.00	1000.00
Building #3	0.00	0.00	0.00
Building #4	0.00	0.00	0.00
Building #5 - House (25%)	59189.00	21.12	2959.45
SUB-TOTAL	106789.00		5339.45
Hives	121230.00	11.01	6061.50
Pallets	1361.00	2.06	156.52
Fork Lift	2100.00	5.71	178.50
Hive Feeders	8455.80	14.58	1691.16
Super Elevator	100.00	7.00	5.00
Uncapping Machines	2900.00	6.21	145.00
Honey Extractor	10400.00	4.65	520.00
Dryer/Heat Exchanger	300.00	3.00	15.00
Wax Spinner/Separator	1200.00	10.00	60.00
Pump & Motor	4045.00	7.25	465.18
Honey Tank & Pipe	1100.00	13.36	55.00
Feed Tank	900.00	9.00	45.00
Storage Vessel	1200.00	3.00	60.00
Boiler Furnace	3760.00	6.57	188.00
Water System	6340.00	9.26	317.00
Compressor	350.00	7.71	17.50
Pressure Washer	880.00	1.27	101.20
Fuel Tank	710.00	10.03	35.50
Blower	695.40	2.84	34.77
Scales	1740.00	7.92	87.00
Barrels	2260.00	1.18	113.00
Barrel Loader	200.00	7.00	10.00
Carts	240.00	8.25	12.00
Fencers/Shockers	40.00	7.00	2.00
Shop Tools	2620.00	7.37	301.30
Staplers	498.00	4.22	24.90
Office Equipment	1865.00	4.72	93.25
Lawn Mower	950.00	6.58	109.25
Over-Wintering Insulation	6690.00	5.20	1338.00
Miscellaneous Equipment	26659.60	45.52	1546.15
SUB-TOTAL	211789.80		13788.67
Truck #1	7760.00	9.48	892.40
Truck #2	16700.00	2.51	1920.50
Truck #3	2720.00	13.00	312.80
Truck #4	3110.00	16.72	357.65
SUB-TOTAL	30290.00		3483.35
=====			
TOTAL INVESTMENT	368228.80		22611.47
=====			

TABLE 6

HONEY PRODUCTION COSTS AND RETURNS
NORTH EAST AND NORTH WEST REGIONS
1994

NUMBER OF HIVES		931.00		
AVERAGE YIELD PER HIVE (LBS)		204.93		
HONEY PRODUCED (LBS)		190793.20		
		TOTAL	PER HIVE	PER POUND PRODUCED
		-----	\$ -----	
BULK HONEY SALES	172661 lbs.	109837.68	117.98	.58
BULK HONEY INVENTORY	16741 lbs.	10856.32	11.66	.06
COMSUMER PACK SALES	423 lbs.	392.60	.42	
COMSUMER PACK INVEN.	159 lbs.	159.00	.17	
OTHER HONEY SALES	810 lbs.	724.74	.78	
A. TOTAL VALUE OF HONEY		121970.33	131.01	.64
WAX/POLLEN/OTHER SALES	1781 lbs.	3302.88	3.55	
CROP INSURANCE RECEIPTS		0.00	0.00	0.00
MISCELLANEOUS INCOME		678.00	.73	
less HONEY PURCHASE FOR RESALE (-)		400.00	.43	
B. TOTAL VALUE OF PRODUCTION		125551.21	134.86	.66
CASH COSTS:				
Bee Purchase - (Package Bees)		325.50	.35	
Bee Purchase - (Queens)		6191.25	6.65	
Freight		436.30	.47	
Feed - Sugar	34959.20 lbs.	10581.72	11.37	
Medicine/Icing Sugar		1001.83	1.08	
Cyanogas/Bee Repellent		115.29	.12	
Bldg./Equip. Repair & Maint.		12109.78	13.01	
Bldg./Equip. Insurance		1296.71	1.39	
Heating Fuel		422.84	.45	
Utilities		1993.88	2.14	
Machinery Fuel/Repairs		3793.93	4.08	
Vehicle Insurance/Registration		1333.49	1.43	
Other Insurance - Product		0.00	0.00	
- Crop		509.47	.55	
Property and Business Tax		1201.56	1.29	
Labels/Tags/Containers		866.87	.93	
Small Tools/H'ware/Off. Supplies		3293.84	3.54	
Promotion/Mktg./Assoc. Fees		557.32	.60	
Accounting/Legal		840.96	.90	
Forage Access		1146.00	1.23	
Custom Work/Leases		3869.07	4.16	
Hired Labour	2087.70 hours	18660.83	20.04	
Miscellaneous Expense		4597.84	4.94	
Operating Interest Paid		132.98	.14	
C. TOTAL CASH COST		75279.24	80.86	.39
Plus:				
Operator Labour	2056.20 hours	21590.10	23.19	
Family Labour	40.00 hours	300.00	.32	
D. TOTAL VARIABLE COST		97169.34	104.37	.51
CAPITAL COSTS:				
Depreciation - Buildings and Equipment		25362.14	27.24	
Capital Interest Paid		2708.06	2.91	
E. TOTAL CAPITAL COST		28070.20	30.15	.15
F. TOTAL PRODUCTION COST		125239.54	134.52	.66
G. MANAGEMENT INDICATORS:				
RETURN TO VALUE OF HONEY (A-C)		46691.09	50.15	.24
GROSS MARGIN (B-C)		50271.97	54.00	.26
RETURN TO INVESTMENT (B-F+Cap.Int.Paid)		3019.73	3.24	
RETURN TO EQUITY (B-F)		311.67	.33	

TABLE 7

APIARY ENTERPRISE INVESTMENT
NORTH EAST AND NORTH WEST REGIONS
1994

INVESTMENT ITEMS:

		TOTAL	PER HIVE
		-----	\$ -----
LAND	14.09 acres	14241.13	15.30
BUILDINGS		81147.10	87.16
BEE EQUIPMENT		241026.25	258.89
MACHINERY		32711.80	35.14
TOTAL INVESTMENT		369126.28	396.48
TOTAL EQUITY	93.76 %	346083.02	371.73

BREAK-DOWN OF INVESTMENT:

	ENTERPRISE VALUE (\$)	AGE (YEARS)	DEPRECIATION (\$)
Land	14241.13	---	---
SUB-TOTAL	14241.13	---	---
Building #1	15225.80	14.82	761.29
Building #2	15280.00	28.82	764.00
Building #3	600.00	42.50	30.00
Building #4	200.00	10.00	10.00
Building #5 - House (25%)	49841.30	40.80	2492.07
SUB-TOTAL	81147.10		4057.36
Hives	133885.00	7.36	6694.25
Pallets	4504.80	7.95	518.05
Fork Lift	10009.80	8.58	850.83
Hive Feeders	5772.50	21.87	1154.50
Super Elevator	525.00	6.57	26.25
Uncapping Machines	3851.60	7.76	192.58
Honey Extractor	20436.20	10.13	1021.81
Dryer/Heat Exchanger	900.00	9.22	45.00
Wax Spinner/Separator	3336.40	8.92	166.82
Pump & Motor	2367.71	7.12	272.29
Honey Tank & Pipe	2289.10	13.85	114.46
Feed Tank	1178.60	6.81	58.93
Storage Vessel	255.00	12.16	12.75
Boiler Furnace	605.30	13.66	30.27
Water System	5339.60	9.46	266.98
Compressor	617.14	4.78	30.86
Pressure Washer	477.00	6.15	54.86
Fuel Tank	640.00	15.08	32.00
Blower	509.70	5.67	25.49
Scales	571.90	9.27	28.60
Barrels	1762.00	2.01	88.10
Barrel Loader	264.70	4.36	13.24
Carts	434.40	8.57	21.72
Fencers/Shockers	1176.90	3.34	58.85
Shop Tools	6079.50	3.17	699.14
Staplers	533.40	6.69	26.67
Office Equipment	1217.80	1.81	60.89
Lawn Mower	1894.10	5.99	217.82
Over-Wintering Insulation	20984.65	6.10	4196.93
Miscellaneous Equipment	8606.45	45.29	562.02
SUB-TOTAL	241026.25		17542.92
Truck #1	7370.00	9.69	847.55
Truck #2	3800.00	11.45	437.00
Truck #3	7351.00	8.82	845.37
Truck #4	14190.80	6.82	1631.94
SUB-TOTAL	32711.80		3761.86
TOTAL INVESTMENT	369126.28		25362.14

Average total cash costs for the nine honey producers in the Peace River region amounted to \$88 per hive (\$0.35 per pound). Total production cost (cash costs, operator and family labour and capital cost) was almost \$140 per hive or \$0.56 per pound of honey produced in 1994. Return over value of honey was positive by \$75 per hive or \$0.30 per pound of honey produced for this group of producers. Average gross margin (total value of production less cash costs) was at \$92 per hive or \$0.37 per pound of honey produced. Return over investment and equity were positive by \$47 and \$40 per hive, respectively. Details on value of production, cash costs, operator and family labour costs, capital costs and management indicators are shown in Table 8.

Investment for land, buildings, bee equipment, and machinery (vehicles) for the study participants in the Peace River region amounted to \$232,233 per beekeeping operation in 1994. Investment per hive for an average beekeeping operation in this region (Group III) was \$278. Details on land, buildings, bee equipment and machinery investments for the nine participants in the Peace River region are presented in Table 9.

HONEY PRODUCTION COSTS AND RETURNS PEACE RIVER REGION 1994

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TABLE 9

**APIARY ENTERPRISE INVESTMENT
PEACE RIVER REGION
1994**

INVESTMENT ITEMS:

		TOTAL	PER HIVE
		-----	\$ -----
LAND	16.11 acres	9938.89	11.90
BUILDINGS		58877.78	70.48
BEE EQUIPMENT		145344.44	174.00
MACHINERY		18072.22	21.63
TOTAL INVESTMENT		232233.33	278.01
TOTAL EQUITY	91.93 %	213500.24	255.59

BREAK-DOWN OF INVESTMENT:

	ENTERPRISE VALUE (\$)	AGE (YEARS)	DEPRECIATION (\$)
Land	9938.89	---	---
SUB-TOTAL	9938.89	---	---
Building #1	8333.33	16.16	416.67
Building #2	8322.22	9.70	416.11
Building #3	3666.67	19.45	183.33
Building #4	1888.89	11.18	94.44
Building #5 - House (25%)	36666.67	52.17	1833.33
SUB-TOTAL	58877.78		2943.89
Hives	84222.22	15.39	4211.11
Pallets	4192.89	8.20	482.18
Fork Lift	4777.78	16.69	406.11
Hive Feeders	4521.11	22.71	904.22
Super Elevator	411.00	15.45	20.55
Uncapping Machines	2694.44	6.62	134.72
Honey Extractor	6555.56	13.67	327.78
Dryer/Heat Exchanger	477.78	5.05	23.89
Wax Spinner/Separator	2511.11	7.75	125.56
Pump & Motor	866.67	9.46	99.67
Honey Tank & Pipe	1377.78	15.32	68.89
Feed Tank	422.22	14.73	21.11
Storage Vessel	0.00	0.00	0.00
Boiler Furnace	1268.89	9.57	63.44
Water System	2977.78	12.63	148.89
Compressor	411.11	5.76	20.56
Pressure Washer	530.56	2.36	61.01
Fuel Tank	422.22	15.16	21.11
Blower	558.89	5.56	27.94
Scales	1044.44	9.61	52.22
Barrels	906.78	3.61	45.34
Barrel Loader	162.44	6.13	8.12
Carts	177.78	14.89	8.89
Fencers/Shockers	1088.89	8.43	54.44
Shop Tools	2227.78	5.88	256.19
Staplers	276.89	7.26	13.84
Office Equipment	1444.44	2.50	72.22
Lawn Mower	550.00	9.70	63.25
Over-Wintering Insulation	3347.22	6.29	669.44
Miscellaneous Equipment	14917.78	47.35	1406.61
SUB-TOTAL	145344.44		9819.33
Truck #1	3777.78	11.83	434.44
Truck #2	4238.89	12.01	487.47
Truck #3	6100.00	8.93	701.50
Truck #4	3955.56	7.58	454.89
SUB-TOTAL	18072.22		2078.31
=====			
TOTAL INVESTMENT	232233.33		14841.52
=====			

SECTION IV

HONEY PRODUCTION COSTS AND RETURNS

BY SIZE OF OPERATION

The study sample of 24 beekeepers was further divided into three groups by size of operation. The main objective of analysing the data by size of operation was to study the economies of scales, i.e., whether the size of operation had any effect on net returns and overall production costs. Following are the three groups by size of operation:

Group	Size of Operation	Number of Participants	Average Number of Hives per Beekeeper
IV	Up to 600 Hives	6	391
V	601 to 1,000 Hives	10	855
VI	Over 1,000 Hives	8	1,759
	TOTAL	24	1,040

Group IV (Up to 600 Hives):

Table 10 presents the results for study participants in Group IV, i.e., up to 600 hives. The number of hives per average study participants for this group was 391. Number of hives owned by this group of participants ranged from 125 to 600 hives. Average yield for this group was 213 pounds of honey per hive. Total value of honey (bulk honey sales, bulk honey inventory, consumer pack sales, consumer pack inventory and other honey sales) amounted to \$52,790 per operation (\$135 per hive) or \$0.63 per pound of honey produced. When receipts from wax/pollen, other sales, crop insurance and miscellaneous income were included to total value of honey, then the total value of production per average honey producer for this group increased to \$55,930 or \$143 per hive (\$0.67 per pound of honey produced).

Cash Costs:

Average cash costs for the smallest group of honey producers; i.e., under 600 hives, are presented in Table 10. These costs amounted to \$77 per hive and \$0.36 per pound of honey produced in 1994.

TABLE 10

**HONEY PRODUCTION COSTS AND RETURNS
BY SIZE OF OPERATION (UP TO 600 HIVES)
1994**

NUMBER OF HIVES		391.17		
AVERAGE YIELD PER HIVE (LBS)		213.21		
HONEY PRODUCED (LBS)		83402.08		
		TOTAL	PER HIVE	PER POUND PRODUCED
		-----	\$ -----	
BULK HONEY SALES	82885 lbs.	52399.00	133.96	.63
BULK HONEY INVENTORY	0 lbs.	0.00	0.00	0.00
COMSUMER PACK SALES	180 lbs.	181.10	.46	
COMSUMER PACK INVEN.	0 lbs.	0.00	0.00	
OTHER HONEY SALES	337 lbs.	209.99	.54	
A. TOTAL VALUE OF HONEY		52790.09	134.96	.63
WAX/POLLEN/OTHER SALES	1755 lbs.	3113.20	7.96	
CROP INSURANCE RECEIPTS		0.00	0.00	0.00
MISCELLANEOUS INCOME		26.83	.07	
less HONEY PURCHASE FOR RESALE (-)		0.00	0.00	
B. TOTAL VALUE OF PRODUCTION		55930.12	142.98	.67
CASH COSTS:				
Bee Purchase - (Package Bees)		0.00	0.00	
Bee Purchase - (Queens)		1017.97	2.60	
Freight		0.00	0.00	
Feed - Sugar	21258.17 lbs.	6170.33	15.77	
Medicine/Icing Sugar		655.63	1.68	
Cyanogas/Bee Repellent		94.83	.24	
Bldg./Equip. Repair & Maint.		4587.36	11.73	
Bldg./Equip. Insurance		679.26	1.74	
Heating Fuel		680.00	1.74	
Utilities		1777.66	4.54	
Machinery Fuel/Repairs		2447.35	6.26	
Vehicle Insurance/Registration		712.86	1.82	
Other Insurance - Product		38.00	.10	
- Crop		719.29	1.84	
Property and Business Tax		1041.96	2.66	
Labels/Tags/Containers		613.10	1.57	
Small Tools/H'ware/Off. Supplies		1301.11	3.33	
Promotion/Mktg./Assoc. Fees		518.21	1.32	
Accounting/Legal		398.00	1.02	
Forage Access		448.00	1.15	
Custom Work/Leases		292.33	.75	
Hired Labour	603.17 hours	3850.58	9.84	
Miscellaneous Expense		1647.69	4.21	
Operating Interest Paid		570.49	1.46	
C. TOTAL CASH COST		30262.01	77.36	.36
Plus:				
Operator Labour	1508.33 hours	15837.50	40.49	
Family Labour	0.00 hours	0.00	0.00	
D. TOTAL VARIABLE COST		46099.52	117.85	.55
CAPITAL COSTS:				
Depreciation - Buildings and Equipment		10666.44	27.27	
Capital Interest Paid		2311.00	5.91	
E. TOTAL CAPITAL COST		12977.44	33.18	.16
F. TOTAL PRODUCTION COST		59076.96	151.03	.71
G. MANAGEMENT INDICATORS:				
RETURN TO VALUE OF HONEY (A-C)		22528.08	57.59	.27
GROSS MARGIN (B-C)		25668.10	65.62	.31
RETURN TO INVESTMENT (B-F+Cap.Int.Paid)		-835.84	-2.14	
RETURN TO EQUITY (B-F)		-3146.84	-8.04	

Average operator and family labour charges for this Group (IV) were \$40 per hive or \$0.19 per pound of honey produced. When operator and family labour costs were added to cash costs, average total variable cost amounted to \$116 per hive or \$0.55 per pound, the highest cost per hive and per pound among the three groups by size of operation.

Capital Costs:

Depreciation for buildings, bee equipment and vehicles, and capital interest paid by the six apiarists in Group IV amounted to \$12,977 (\$33 per hive) or \$0.16 per pound of honey produced. Breakdown of capital costs is also shown in Table 10.

Total Production Cost:

Average total production cost for the study participants in the up to 600 hives group was estimated at \$59,077 for a honey operation with 391 hives. Production cost per hive and per pound of honey produced was the highest for this group (among the three groups by size of operation) of beekeepers at \$151 and \$0.71, respectively.

Management Indicators:

Average return to value of honey over cash costs for Group IV participants, (up to 600 hives) was \$58 per hive or \$0.27 per pound of honey produced. Gross margin for this group was at \$66 per hive or \$0.31 per pound of honey produced. Return to investment and equity were negative by \$2 and \$8 per hive, respectively. Details on cash costs, operator and family labour, capital costs, and management indicators are given in Table 10.

Investment Costs:

Average total investment for honey producers in the up to 600 hives group was \$184,220 per operation or \$471 per hive, the highest among the three groups by size of operation. Average equity for this group was also high at about 89 per cent of the total investment. Table 11 presents details on land, buildings, bee equipment and machinery (vehicles) investment for Group IV in 1994.

TABLE 11

APIARY ENTERPRISE INVESTMENT
BY SIZE OF OPERATION (UP TO 600 HIVES)
 1994

INVESTMENT ITEMS:

		TOTAL	PER HIVE
		-----	\$ -----
LAND	17.50 acres	11583.33	29.61
BUILDINGS		69566.67	177.84
BEE EQUIPMENT		91436.67	233.75
MACHINERY		11633.33	29.74
TOTAL INVESTMENT		184220.00	470.95
TOTAL EQUITY	89.09 %	164125.50	419.58

BREAK-DOWN OF INVESTMENT:

	ENTERPRISE VALUE (\$)	AGE (YEARS)	DEPRECIATION (\$)
Land	11583.33	---	---
SUB-TOTAL	11583.33	---	---
Building #1	16000.00	13.15	800.00
Building #2	150.00	25.00	7.50
Building #3	3333.33	20.00	166.67
Building #4	333.33	20.00	16.67
Building #5 - House (25%)	49750.00	31.62	2487.50
SUB-TOTAL	69566.67		3478.33
Hives	52166.67	13.68	2608.33
Pallets	685.00	2.92	78.78
Fork Lift	2583.33	0.00	219.58
Hive Feeders	1639.17	25.21	327.83
Super Elevator	158.33	8.58	7.92
Uncapping Machines	2166.67	5.46	108.33
Honey Extractor	4550.00	12.22	227.50
Dryer/Heat Exchanger	550.00	4.00	27.50
Wax Spinner/Separator	3000.00	6.67	150.00
Pump & Motor	1425.33	4.23	163.91
Honey Tank & Pipe	916.67	14.07	45.83
Feed Tank	375.00	8.22	18.75
Storage Vessel	341.67	10.24	17.08
Boiler Furnace	1347.17	9.01	67.36
Water System	4283.33	8.34	214.17
Compressor	408.33	3.98	20.42
Pressure Washer	145.83	7.43	16.77
Fuel Tank	321.67	12.21	16.08
Blower	309.17	3.84	15.46
Scales	608.33	8.66	30.42
Barrels	622.50	2.46	31.13
Barrel Loader	202.00	4.14	10.10
Carts	203.33	6.74	10.17
Fencers/Shockers	541.67	1.37	27.08
Shop Tools	1458.33	5.27	167.71
Staplers	398.33	7.96	19.92
Office Equipment	2250.00	2.70	112.50
Lawn Mower	1175.00	5.57	135.13
Over-Wintering Insulation	3200.00	5.21	640.00
Miscellaneous Equipment	3403.83	43.49	314.52
SUB-TOTAL	91436.67		5850.28
Truck #1	5166.67	16.87	594.17
Truck #2	4516.67	11.18	519.42
Truck #3	716.67	14.74	82.42
Truck #4	1233.33	3.74	141.83
SUB-TOTAL	11633.33		1337.83
=====			
TOTAL INVESTMENT	184220.00		10666.44
=====			

TABLE 12

**HONEY PRODUCTION COSTS AND RETURNS
BY SIZE OF OPERATION (601 - 1000 HIVES)**

1994

NUMBER OF HIVES		855.50		
AVERAGE YIELD PER HIVE (LBS)		235.98		
HONEY PRODUCED (LBS)		201880.70		
			PER HIVE	PER POUND PRODUCED
		TOTAL		
			\$	
BULK HONEY SALES	200402 lbs.	132021.74	154.32	.65
BULK HONEY INVENTORY	34 lbs.	21.29	.02	.00
COMSUMER PACK SALES	879 lbs.	817.96	.96	
COMSUMER PACK INVEN.	363 lbs.	391.67	.46	
OTHER HONEY SALES	203 lbs.	215.69	.25	
A. TOTAL VALUE OF HONEY		133468.36	156.01	.66
WAX/POLLEN/OTHER SALES	4434 lbs.	10517.11	12.29	
CROP INSURANCE RECEIPTS		0.00	0.00	0.00
MISCELLANEOUS INCOME		126.22	.15	
less HONEY PURCHASE FOR RESALE (-)		0.00	0.00	
B. TOTAL VALUE OF PRODUCTION		144111.69	168.45	.71
CASH COSTS:				
Bee Purchase - (Package Bees)		625.50	.73	
Bee Purchase - (Queens)		4231.62	4.95	
Freight		352.02	.41	
Feed - Sugar	31633.00 lbs.	9208.89	10.76	
Medicine/Icing Sugar		1882.21	2.20	
Cyanogas/Bee Repellent		186.00	.22	
Bldg./Equip. Repair & Maint.		5440.24	6.36	
Bldg./Equip. Insurance		1520.63	1.78	
Heating Fuel		744.86	.87	
Utilities		2636.71	3.08	
Machinery Fuel/Repairs		3853.34	4.50	
Vehicle Insurance/Registration		1313.01	1.53	
Other Insurance - Product		69.20	.08	
- Crop		924.58	1.08	
Property and Business Tax		1134.40	1.33	
Labels/Tags/Containers		2280.72	2.67	
Small Tools/H'ware/Off. Supplies		2887.21	3.37	
Promotion/Mktg./Assoc. Fees		1225.47	1.43	
Accounting/Legal		1411.53	1.65	
Forage Access		4218.50	4.93	
Custom Work/Leases		1336.45	1.56	
Hired Labour	2028.05 hours	15705.32	18.36	
Miscellaneous Expense		5187.58	6.06	
Operating Interest Paid		1398.97	1.64	
C. TOTAL CASH COST		69774.94	81.56	.35
Plus:				
Operator Labour	2076.30 hours	21801.15	25.48	
Family Labour	10.00 hours	75.00	.09	
D. TOTAL VARIABLE COST		91651.09	107.13	.45
CAPITAL COSTS:				
Depreciation - Buildings and Equipment		15917.61	18.61	
Capital Interest Paid		7506.79	8.77	
E. TOTAL CAPITAL COST		23424.40	27.38	.12
F. TOTAL PRODUCTION COST		115075.49	134.51	.57
G. MANAGEMENT INDICATORS:				
RETURN TO VALUE OF HONEY (A-C)		63693.42	74.45	.32
GROSS MARGIN (B-C)		74336.75	86.89	.37
RETURN TO INVESTMENT (B-F+Cap.Int.Paid)		36542.99	42.72	
RETURN TO EQUITY (B-F)		29036.20	33.94	

Group V (601 to 1,000 Hives):

Average number of hives for this group (10 beekeepers) was 855 hives, with an average production of 236 pounds per hive. The number of hives owned by this group of participants ranged from 720 to 1,000. Section A in Table 12 presents total value of honey (bulk honey sales, consumer pack sales, honey held in inventory, and other honey sales) which was estimated at \$133,468 per beekeeping operation of \$156 per hive (0.66 per pound). Total value of production which includes total value of honey and wax/pollen/other sales, insurance receipts, miscellaneous income, and less honey purchased for resale amounted to \$144,112 per average apiarist, and \$168 per hive or \$0.71 per pound of honey produced.

Cash Costs:

Cash costs for this Group (V) (601 to 1,000 hives) of beekeepers were estimated at \$69,775 per beekeeping operation or \$82 per hive (\$0.35 per pound) during the 1994 honey production year. Average operator and family labour charges were \$26 per hive or \$0.11 per pound of honey produced. When cash costs were combined with the operator and family labour costs, average total variable cost amounted to \$91,651 per operation or \$107 per hive or \$0.45 per pound of honey produced (Table 12).

Capital Costs:

Capital costs for Group V honey producers (601 to 1,000 hives) were estimated at \$27 per hive or \$0.12 per pound of honey produced. Capital interest paid by this group was about \$9 per hive during the 1994 production year.

Total Production Cost:

Average total production cost (cash costs, operator and family labour, and capital costs) for honey producers in this size group, was \$115,075 per average beekeeping operation. In terms of per hive and per pound of honey produced, average production cost for this group was \$135 and \$0.57, respectively.

Return over cash costs for Group V participants (601 to 1,000 hives) was \$74 per hive or \$0.32 per pound of honey produced. Return to investment and equity were positive at \$43 and \$34 per hive, respectively. Details on total value of production, costs and returns are given in Table 12.

Investment Cost:

Average total investment for the study participants in Group V (601 to 1,000 hives) was \$250,730 per operation or \$293 per hive. Land area associated with the honey operation for this group was over 16 acres, valued at \$12,405 or \$738 per acre (\$14.50 per hive). Market value for buildings was estimated at \$69,687 per average honey operation or \$81 per hive in Group V (Table 13). Bee equipment investment for this group was estimated at \$150,727 per operation or \$176 per hive. Average investment for vehicles was \$17,910 per operation or \$21 per hive. Details on land, buildings, bee equipment, and machinery (vehicles) investment are presented in Table 13.

Group VI (Over 1,000 Hives):

Almost all of the honey produced by this group was sold as bulk honey. About ten per cent of the honey produced by these producers was held in inventory. Total value of honey for Group VI participants was \$225,632 or \$128 per hive. Average value per pound of honey produced was \$0.64 for this group. When receipts from wax/pollen/other sales, crop insurance and miscellaneous sales were included with value of honey, total value of production increased to \$243,242 or \$138 per hive (\$0.69 per pound). The size of beekeeping operations for participants in this group ranged from 1,020 to 2,250 hives, with an average of 1,759 hives per operation. Average yield per hive was lower for this group at 201 pounds. Details on honey sales and other income are presented in Table 14.

Cash Costs:

Cash costs for the largest group of honey producers (over 1,000 hives) were estimated at \$74 per hive or \$0.37 per pound of honey produced. The most significant cash cost items for this group were hired labour, followed by sugar, buildings/equipment, repairs and maintenance, and bee purchase (queens) expenses.

Operator and family labour amounted to \$17 per hive for this group. When operator and family labour costs were added to cash costs, variable cost per average apiarist in this group amounted to \$91 per hive or \$0.45 per pound of honey produced.

TABLE 13

**APIARY ENTERPRISE INVESTMENT
BY SIZE OF OPERATION (601 - 1000 HIVES)
1994**

INVESTMENT ITEMS:

		TOTAL	PER HIVE
		-----	\$ -----
LAND	16.80 acres	12405.10	14.50
BUILDINGS		69687.10	81.46
BEE EQUIPMENT		150727.31	176.19
MACHINERY		17910.00	20.94
TOTAL INVESTMENT		250729.51	293.08
TOTAL EQUITY	95.26 %	238855.56	279.20

BREAK-DOWN OF INVESTMENT:

	ENTERPRISE VALUE (\$)	AGE (YEARS)	DEPRECIATION (\$)
Land	12405.10	---	---
SUB-TOTAL	12405.10	---	---
Building #1	11413.30	15.19	570.67
Building #2	21480.00	22.68	1074.00
Building #3	900.00	20.22	45.00
Building #4	1500.00	10.00	75.00
Building #5 - House (25%)	34393.80	60.43	1719.69
SUB-TOTAL	69687.10		3484.36
Hives	85585.00	12.79	4279.25
Pallets	4811.80	9.19	553.36
Fork Lift	8409.80	11.34	714.83
Hive Feeders	4630.20	27.31	926.04
Super Elevator	399.90	16.00	20.00
Uncapping Machines	3158.50	8.13	157.93
Honey Extractor	6487.50	15.02	324.38
Dryer/Heat Exchanger	600.00	10.58	30.00
Wax Spinner/Separator	2176.40	10.62	108.82
Pump & Motor	947.51	12.16	108.96
Honey Tank & Pipe	1779.10	15.18	88.96
Feed Tank	797.20	9.78	39.86
Storage Vessel	0.00	0.00	0.00
Boiler Furnace	480.00	13.71	24.00
Water System	1826.60	15.27	91.33
Compressor	466.00	6.80	23.30
Pressure Washer	540.00	3.38	62.10
Fuel Tank	623.00	16.33	31.15
Blower	600.20	6.28	30.01
Scales	764.40	10.32	38.22
Barrels	324.60	8.01	16.23
Barrel Loader	294.70	7.10	14.74
Carts	312.40	13.45	15.62
Fencers/Shockers	1065.60	6.22	53.28
Shop Tools	3933.70	3.18	452.38
Staplers	300.40	9.62	15.02
Office Equipment	1508.50	2.51	75.43
Lawn Mower	1144.80	8.31	131.65
Over-Wintering Insulation	4011.55	11.46	802.31
Miscellaneous Equipment	12747.95	48.66	1144.48
SUB-TOTAL	150727.31		10373.61
Truck #1	3730.00	12.48	428.95
Truck #2	3345.00	10.23	384.68
Truck #3	5110.00	7.33	587.65
Truck #4	5725.00	5.70	658.38
SUB-TOTAL	17910.00		2059.65
=====			
TOTAL INVESTMENT	250729.51		15917.61
=====			

**HONEY PRODUCTION COSTS AND RETURNS
BY SIZE OF OPERATION (OVER 1000 HIVES)
1994**

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Capital Costs:

Capital costs (depreciation for buildings, bee equipment, vehicles and capital interest paid) for Group VI participants (over 1,000 hives) were calculated to be \$41,248 per operation or \$23 per hive (\$0.12 per pound of honey produced). This group of participants had the lowest capital interest paid, at about \$4 per hive, among the three groups analyzed by the size of beekeeping operation.

Total Production Cost:

Average total production cost for the largest group of honey producers (Group VI – over 1,000 hives) amounted to \$114 per hive for a 1,759 hive operation. In terms of per pound of honey produced, the cost was \$0.57 in 1994. Cash costs for an average honey operation in this group were about 65 per cent of the total production costs. Operator and family labour was 15 per cent of the total production costs and the balance (20 per cent) were the capital costs.

Return over cash costs based on total value of production was \$64 per hive for the Group VI participants, or \$0.32 per pound of honey produced. Return to investment was positive by \$28 and equity by \$24 per hive. Details on cash costs, operator and family labour, capital costs and management indicators are presented in Table 14.

Investment Cost:

Investment and investment costs for the largest group of honey producers (over 1,000 hives) are shown in Table 18. Land area associated with the beekeeping operations was about 14 acres, valued at \$16,889 or \$1,207 per acre. Investment in land per hive was \$10. Average buildings investment amounted to \$95,131 or \$54 per hive. Investment in bee equipment was \$193 per hive. Investment in vehicles was \$49,046 per operation or \$28 per hive. Total investment for Group VI participants amounted to \$501,236 or \$285 per hive. Equity for this group of honey producers was at 91 per cent. Details on all investment items are presented in Table 15.

TABLE 15

**APIARY ENTERPRISE INVESTMENT
BY SIZE OF OPERATION (OVER 1000 HIVES)
1994**

INVESTMENT ITEMS:

		TOTAL	PER HIVE
		-----	\$ -----
LAND	13.99 acres	16888.79	9.60
BUILDINGS		95130.63	54.09
BEE EQUIPMENT		340177.30	193.42
MACHINERY		49039.75	27.88
TOTAL INVESTMENT		501236.46	285.00
TOTAL EQUITY	90.60 %	454130.20	258.21

BREAK-DOWN OF INVESTMENT:

	ENTERPRISE VALUE (\$)	AGE (YEARS)	DEPRECIATION (\$)
Land	16888.79	---	---
SUB-TOTAL	16888.79	---	---
Building #1	19390.63	11.44	969.53
Building #2	14000.00	9.25	700.00
Building #3	1250.00	31.50	62.50
Building #4	250.00	10.00	12.50
Building #5 - House (25%)	60240.00	25.34	3012.00
SUB-TOTAL	95130.63		4756.53
Hives	191768.75	8.45	9588.44
Pallets	4670.13	6.09	537.06
Fork Lift	6750.00	12.64	573.75
Hive Feeders	10569.63	16.58	2113.93
Super Elevator	562.50	5.11	28.13
Uncapping Machines	4085.13	6.77	204.26
Honey Extractor	27898.38	8.11	1394.92
Dryer/Heat Exchanger	687.50	5.91	34.38
Wax Spinner/Separator	2775.00	8.19	138.75
Pump & Motor	4209.38	7.05	484.08
Honey Tank & Pipe	2187.50	13.31	109.38
Feed Tank	1233.00	8.14	61.65
Storage Vessel	812.50	4.31	40.63
Boiler Furnace	2923.75	7.56	146.19
Water System	8491.25	9.48	424.56
Compressor	563.92	5.07	28.20
Pressure Washer	958.75	2.79	110.26
Fuel Tank	698.75	11.52	34.94
Blower	718.38	3.82	35.92
Scales	1565.63	8.13	78.28
Barrels	3762.50	1.43	188.13
Barrel Loader	118.75	1.63	5.94
Carts	350.00	7.39	17.50
Fencers/Shockers	982.88	6.69	49.14
Shop Tools	5732.25	5.14	659.21
Staplers	615.25	3.32	30.76
Office Equipment	739.75	4.07	36.99
Lawn Mower	1267.88	5.75	145.81
Over-Wintering Insulation	26763.25	5.06	5352.65
Miscellaneous Equipment	25715.00	46.50	1584.81
SUB-TOTAL	340177.30		24238.60
Truck #1	9775.00	6.34	1124.13
Truck #2	12387.50	4.62	1424.56
Truck #3	10826.25	10.14	1245.02
Truck #4	16051.00	8.20	1845.87
SUB-TOTAL	49039.75		5639.57
TOTAL INVESTMENT	501236.46		34634.70

SECTION V

SUMMARY

This section provides a summary of the value of honey (bulk honey sales and inventory, consumer pack sales and inventory, and any other honey sales) and total value of production (includes value of honey, receipts from wax/pollen, crop insurance receipts, and miscellaneous income) cash costs, operator and family labour, capital costs and management indicators for the study sample of 24 beekeepers across the province. A gist of similar information is also presented for the various groups by region and size of operation in Table 16.

Average yield per hive for the study sample was 214 pounds during the 1994 production year. It ranged from 192 pounds in the Peace region. When yield per hive was compared among the groups by size of operation, it ranged from 213 pounds for Group IV (up to 600 hives), to about 236 pounds for Group V (601 to 1,000 hives), (Table 16).

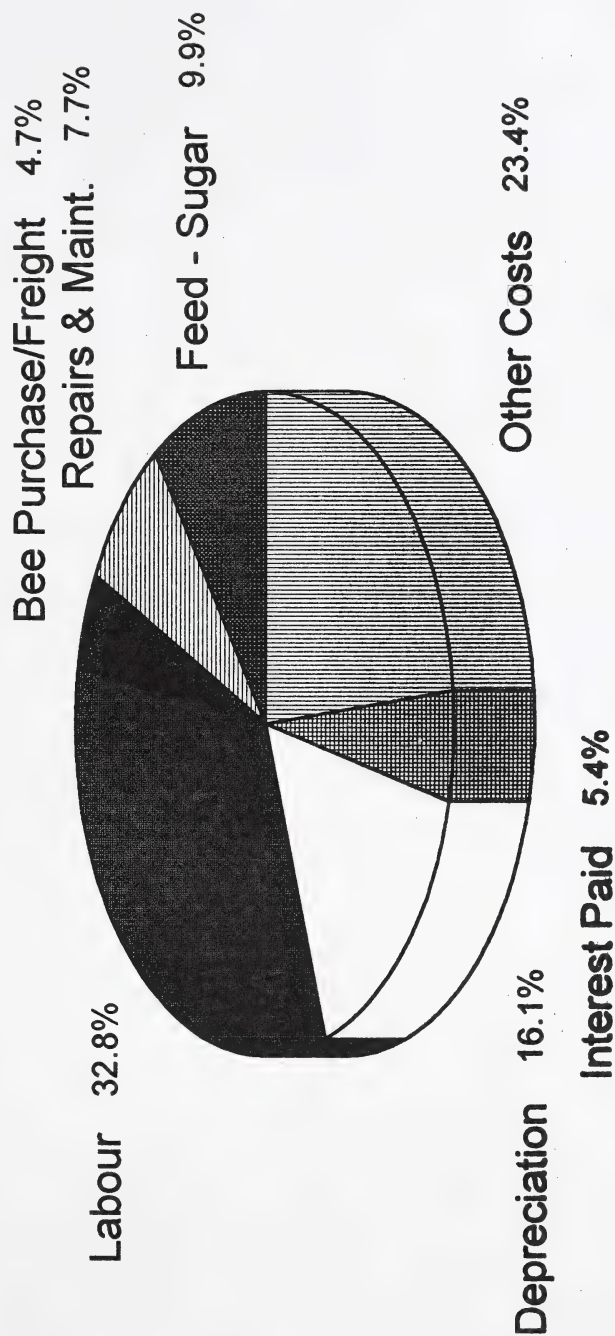
Average total value of production (bulk honey sales, other honey sales and miscellaneous income) was \$149 per hive or \$0.70 per pound of honey produced for the study sample. It ranged from \$135 per hive in the North–East and North–West regions to \$180 per hive in the Peace River region. By size of operation, average value of production ranged from \$138 per hive for Group VI (over 1,000 hives) to \$168 per hive for Group V (601 to 1,000 hives).

Details on cash costs (input costs, free–sugar and hired labour), operator and family labour, capital costs are also presented in Table 16 for the study sample (Alberta), by regions and size of operation. Average total production cost was estimated at \$125 per hive for the study sample (\$0.58 per pound of honey produced). Figure 2 shows the relative proportions of all costs for honey production in Alberta. These costs ranged from \$99 per hive in the Southern and North–Central regions to \$140 per hive in the Peace River region. By size of operation, total production costs ranged from \$114 per hive (\$0.57 per pound) for Group VI (over 1,000 hives) to \$151 per hive (\$0.71 per pound) for Group V (601 to 1,000 hives). Average total production costs were \$135 per hive (\$0.57 per pound of honey produced) for the honey producers in Group V (601 to 1,000 hives).

TABLE 16: A SUMMARY OF HONEY PRODUCTION COSTS AND RETURNS BY REGION AND SIZE OF OPERATION, 1994

ALBERTA		By Region				By Size of Operation					
SOUTHERN, SOUTH AND NORTH-CENTRAL REGIONS		NORTH-EAST AND NORTH-WEST REGIONS		PEACE RIVER REGION		UP TO 600 HIVES		601 TO 1,000 HIVES		OVER 1,000 HIVES	
1,040		1,659		931		835		391		855	
Average Number of Hives	Per Hive	Per Pound Produced	Per Hive	Per Pound Produced	Per Hive	Per Pound Produced	Per Hive	Per Pound Produced	Per Hive	Per Pound Produced	Per Pound Produced
Average Yield/Hive (lbs.)	214.28		191.87		204.93		250.13		213.21		235.98
Bulk Honey Sales (\$)	129.79	0.61	114.06	0.59	117.98	0.58	161.45	0.65	133.96	0.63	154.32
Other Honey Sales*	8.63	0.04	10.36	0.06	13.03	0.06	1.30	0.00	1.00	0.00	1.69
Miscellaneous Income	11.28	0.05	12.29	0.06	4.71	0.02	17.32	0.07	8.03	0.04	12.44
TOTAL VALUE OF PRODUCTION (\$)	149.07	0.70	136.71	0.71	134.86	0.66	180.07	0.72	142.98	0.67	168.45
CASH COSTS											
Input Costs (\$)	46.45	0.22	32.66	0.17	49.45	0.24	57.67	0.23	51.75	0.24	52.44
Feed – Sugar	12.39	0.06	12.43	0.06	11.37	0.06	13.61	0.05	13.77	0.07	10.76
Hired Labour	17.97	0.08	16.93	0.09	20.04	0.10	16.53	0.07	9.84	0.05	18.36
A. Total Cash Costs (\$)	76.81	0.36	62.02	0.32	80.86	0.39	87.81	0.35	77.36	0.36	81.56
B. Operator & Family Labour	22.18	0.10	16.15	0.09	23.51	0.12	27.04	0.11	40.49	0.19	25.57
C. Capital Costs	25.71	0.12	20.81	0.11	30.15	0.15	25.52	0.10	33.18	0.16	27.38
TOTAL PRODUCTION COSTS (A + B + C) (\$)	124.69	0.58	98.99	0.52	134.52	0.66	140.37	0.56	151.03	0.71	134.51
RETURN OVER CASH COSTS (\$)											
RETURN TO INVESTMENT (\$)	30.06	0.14	44.65	0.23	3.24	0.02	47.46	0.19	(2.14)	(0.01)	42.72
RETURN TO EQUITY (\$)	24.38	0.11	37.72	0.20	0.33	0.002	39.70	0.16	(8.04)	(0.04)	33.94
AV. INVESTMENT PER HIVE (\$)	305.24	1.42	226.07	1.18	396.48	1.93	278.01	1.11	470.95	2.21	293.08
Includes honey inventory and other sales.											

* Includes honey inventory and other sales.



**Figure 2: Breakdown of Total Costs
For Honey Production, 1994**

Returns over cash costs were positive for the study sample and all groups (by regions and size of operation). The highest return over cash costs was \$92 per hive for the honey producers in the Peace region. It was \$71 per hive for the study sample, \$75 per hive for the group of producers in the Southern and North–Central regions, and \$54 per hive for the North–East and North–West groups and \$92 for the Peace River region group. Average return to investment was positive for all groups of producers by region and size of operation except Group IV (up to 600 hives). Details on management indicators for the study sample, by region and size of operation are presented in Table 16. Average investment per hive for the various groups is also given in this Table. In 1994, investment per hive ranged from a high of \$471 per hive for Group IV (up to 600 hives) to \$285 per hive for Group VI (over 1,000 hives). By regions, investment per hive ranged from \$226 in Southern and North–Central regions to \$396 in the North East and North West regions.

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